Improved brake disk

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Abstract of **EP0971147**

Improved brake disc especially suitable for motor-cross and trial motorcycles, with the central feature that the periphery (1), forming the brake plate, has a set of notches (11-12) on the inside and outside borders or edges, to reduce the weight of the disc and facilitate its cooling by increasing its area, said notches being distributed evenly around the disc periphery to maintain its centre of gravity in relation to its geometrical centre, and with said notches fulfilling the role of the traditional weight-reducing openings or drillholes, while preventing the problem of the accumulation of mud, typical of the latter.

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(54) Improved brake disk

(57) Improved brake disc especially suitable for motor-cross and trial motorcycles, with the central feature that the periphery (1), forming the brake plate, has a set of notches (11-12) on the inside and outside borders or edges, to reduce the weight of the disc and facilitate its cooling by increasing its area, said notches being distributed evenly around the disc periphery to maintain its centre of gravity in relation to its geometrical centre, and with said notches fulfilling the role of the traditional weight-reducing openings or drillholes, while preventing the problem of the accumulation of mud, typical of the latter.

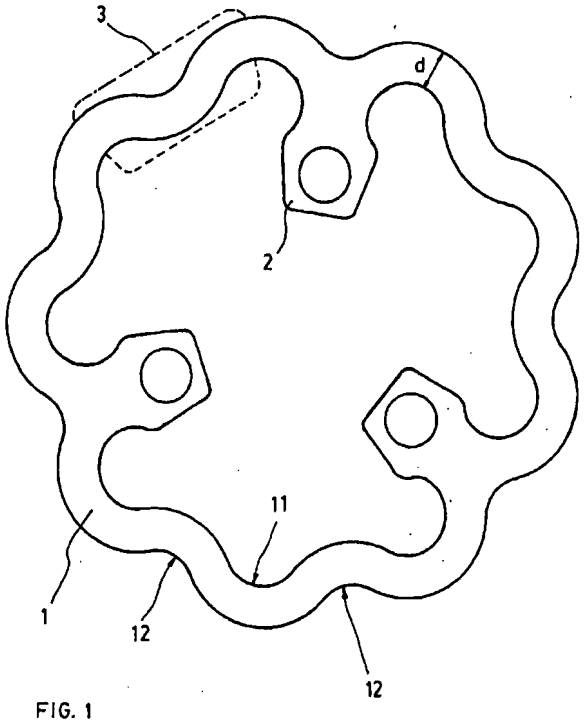

FIG. 1

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Description

OBJECT OF THE INVENTION

[0001] As its title suggests, this invention refers to a brake disc for motorcycles or the like, with a series of constructional features on the peripheral part forming the brake band.

BACKGROUND TO THE INVENTION

[0002] Motorcycle brake discs generally have an external section which is ring-shaped, flat, and not very thick, on which the brake shoes operate; this external section forms the brake band. Said discs also have an interior form designed to allow them to be fixed on to the wheel. This interior form and the exterior section may be a monobloc unit or may be joined in such as way as to permit expansion of the outer section so that it will not become deformed when it heats.

[0003] One of the problems of such discs arises precisely from the heating they experience during braking so that, normally, the exterior part has a number of openings through it to facilitate cooling.

[0004] On so-called road motorcycles, the discs reach very high temperatures because of the speeds involved, so that the openings in the brake discs are important in facilitating cooling. Should water get into these openings, it evaporates virtually instantly thanks to the high temperature of the disc.

[0005] However, on cross and trial motorcycles, these openings have advantages in terms of reduced weight, but they do have significant drawbacks when mud gets into them since it is unable to be released because the disc turns at a much slower speed than on road motorcycles.

A DESCRIPTION OF THE INVENTION

[0006] To overcome these problems, particularly on cross and trial motorcycles, the brake disc which is the subject of this invention has been designed with a number of constructional features on the peripheral section forming the brake band.

[0007] In this invention, said peripheral part of the disc does not have inside holes, so that the problem of the accumulation and retention of mud inside them is overcome; said peripheral section also has a series of off-sets on its inside and outside edges of the same thickness as the rest of the section so as to reduce the total weight of the disc, facilitate its cooling and prevent mud from being retained inside.

[0008] Said off-sets on the inside and outside edges of the peripheral section of the disc are preferably arranged alternately so that the width of said section is substantially constant. As a result, during braking the contact surface of the brake band with the shoes hardly alters with the rotation of the disc: otherwise, braking may be intermittent and may vary according to the area of contact between disc and shoes.

[0009] To ensure uniform distribution of the disc mass, the inside and outside off-sets are distributed evenly on the periphery, in alternating form.

A DESCRIPTION OF THE DRAWINGS

[0010] To complete this description and aid in a better understanding of the features of the invention, these Specifications are accompanied by a set of drawings, forming an integral part hereof and where, by way of illustration and without limitation, the following is shown:

[0011] Figure 1 is an elevated view of a variant of the design for the brake disc which is the subject of the invention, with the running band of sinusoidal form: this figure also shows the outline of one of the brake shoes, with a broken line.

[0012] Figure 2 shows a design variant partially showing the peripheral section of the disc, in this case with substantially trapezoid-shaped off-sets.

A PREFERRED EMBODIMENT OF THE INVENTION

[0013] As can be seen from the aforementioned figures, the brake disc which is the subject of the invention comprises the usual peripheral section (1) forming the brake band, with an internal form (2) to enable it to be attached to its wheel.

[0014] As shown in figure 1, said peripheral portion (1) is a single solid block, with off-sets (11 and 12) on its inside and outside edges, distributed along those edges, and displaced at an angle to each other, so that the inside off-sets (11) are in the area between two consecutive outside off-sets (12): as a result, said peripheral section (1) is substantially the same width (d) throughout its length.

[0015] This constant width of the section (1) ensures that, during braking, the contact area between said section (1) and the brake shoes (3) is constant: otherwise, braking might be intermittent, precisely because of the variations in the area of contact between the two elements.

[0016] The arrangement of the inside off-sets (11) and their outside counterparts (12) not just helps to cool the disc, but also prevents mud or other elements which might negatively affect braking from accumulating on it.

[0017] As the figures show, the inside and outside off-sets (11 and 12)may be rounded, with section (1) taking on a sinusoidal form as in figure 1: or they may have different shapes as in the design variant in figure 2 where the off-sets (11a and 12a) are substantially trapezoid-shaped.

[0018] It is not considered necessary to extend this description in order for any expert in the field to understand the scope of the invention and the advantages arising from it.

[0019] The terms of these Specifications must be tak-

en always in the broad sense, without limitation.

[0020] The materials, shape, size and layout of the elements may be changed provided that this does not involve an alteration to the essential characteristics of the invention, claimed below.

Claims

1. An improved brake disc of the type formed by a peripheral section (1) making up a brake band, with an interior form (2) to enable it to be fitted to its wheel, wherein the brake band forms two lateral, flat, parallel surfaces on which the brake shoes (3) can act, characterised because said peripheral section (1) of the disc, forming the brake band, has a series of off-sets (11 and 12) on its inside and outside edges, of the same thickness as the rest of said section, intended to reduce the total weight of the disc, facilitate its cooling and prevent the disc from accumulating mud or other elements.

2. A disc as set forth in the previous claim wherein said peripheral section (1) forming the brake band is solid, without inside openings.

3. A disc as set forth in claim 1 wherein the off-sets (11 and 12) on the inside and outside edges of the peripheral section (1) are arranged altemately.

4. A disc as set forth in claim 1 wherein the width of said peripheral section (1) is substantially constant.

5. A disc as set forth in claim 1 wherein the inside and outside off-sets (11 and 12) are distributed evenly on the peripheral section (1) of the disc.

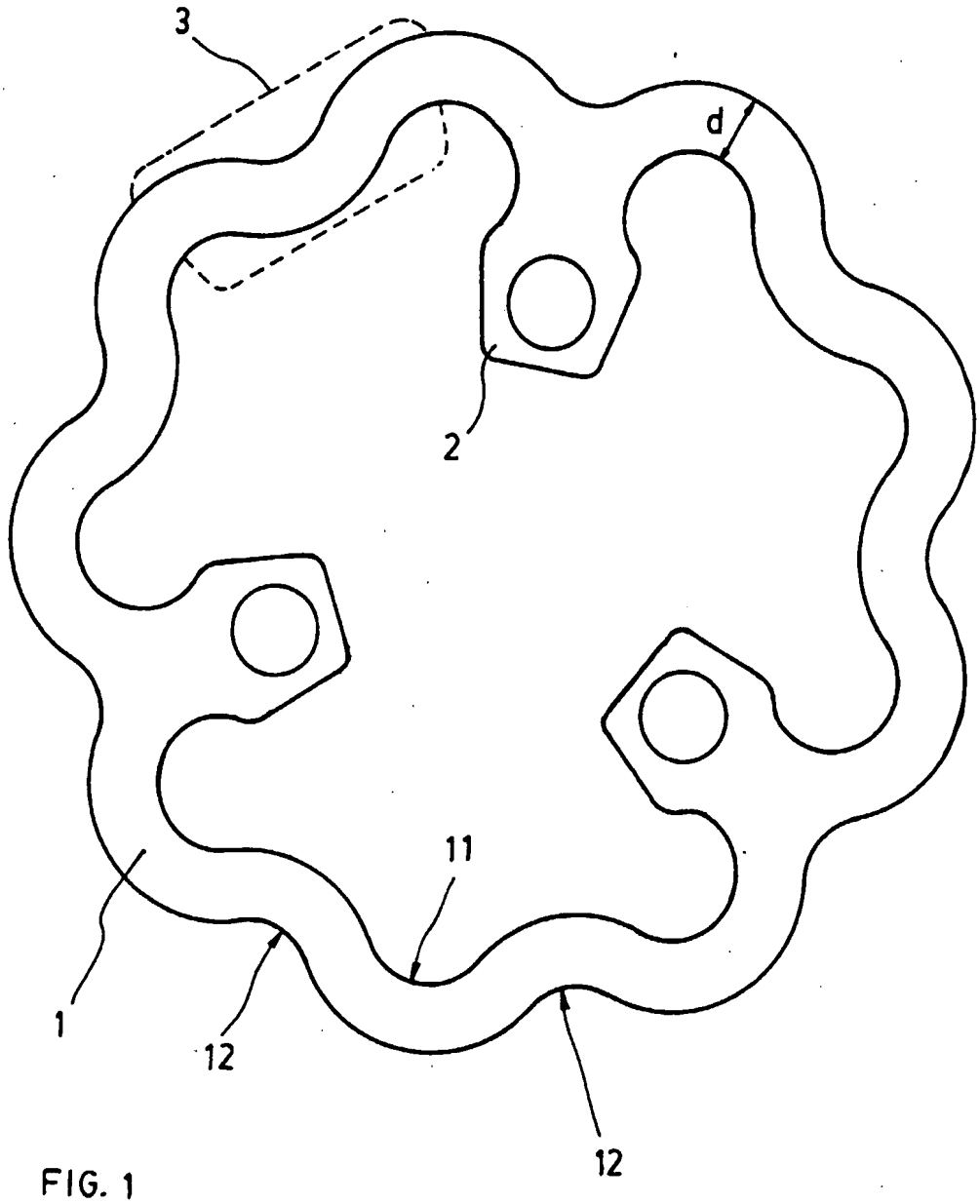
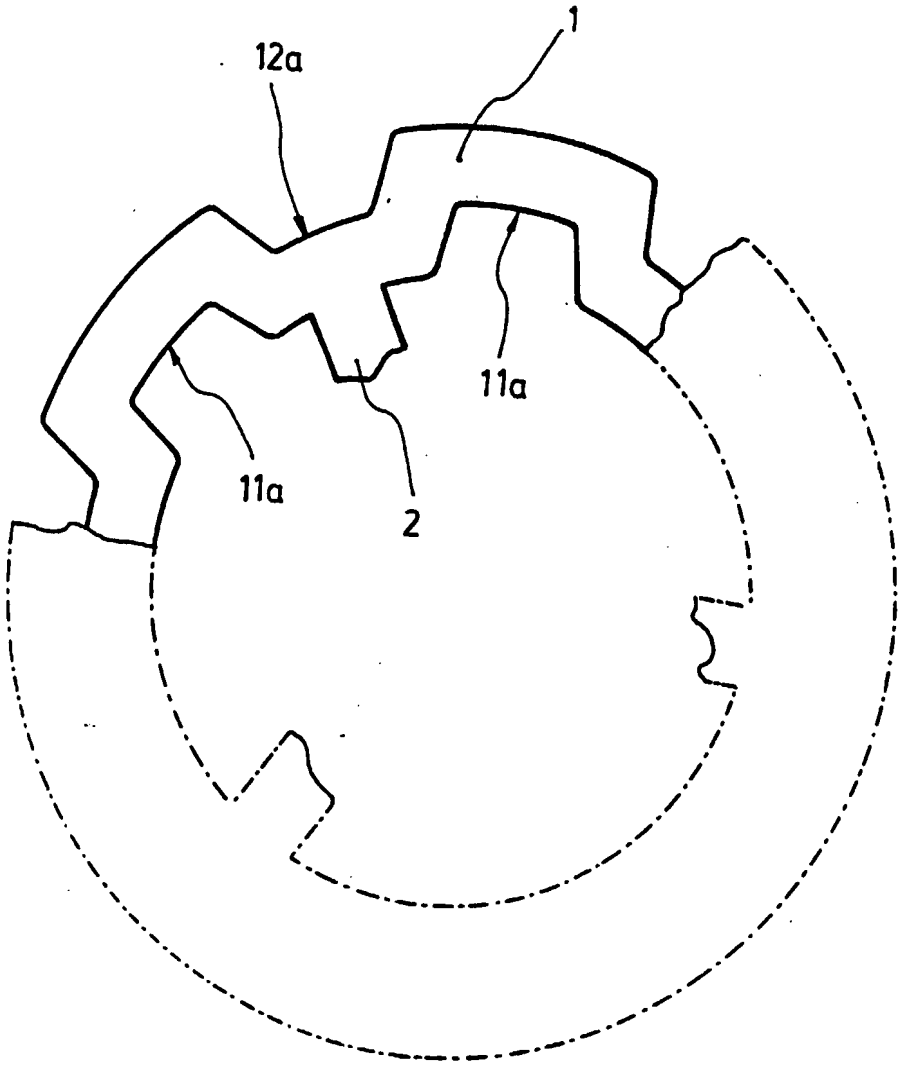


FIG. 1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12a
11a
11a
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